

cornis. The egg is larger, being .03X.02 of an inch as against .025X.015 in the case of *longicornis*. In color, instead of being dirty white it is dull yellowish. The hexagonal pits are exactly like those on the egg of *longicornis*, but are perhaps smaller, as there are 30-35 in its entire length as against 20 only in the smaller egg of *longicornis*."

The larva is said to differ from that of

D. longicornis in being larger and in the presence of the two small tubercles at the posterior edge of the caudal plate. The pupae of the two species are said to differ only in size.

Two dipterous parasites of *D. 12-punctata* are known to Professor Riley, one a Tachinid obtained from the larva, the other coming from the adult.

DESCRIPTIONS OF THE PREPARATORY STAGES OF TWO FORMS OF CERURA CINEREA Walk.

BY HARRISON G. DYAR, NEW YORK.

I have discussed the differences between the Eastern and Western forms of the imago in the Canadian entomologist¹ and in the present article consider the larval stages. The larvae of the two forms are much alike; the differences, after eliminating certain apparent ones due to individual variation, narrow to the greater prominence of crimson in *cinereoides* and its somewhat shorter caudal filaments or *stema-poda*, to use Dr. Packard's term. My examples of *cinerea* were nearly without crimson spots in the dorsal patches, but Professor Lintner has allowed me to see some notes by Professor Riley on this species in which they are described as present, and doubtless the character is variable. In the following some allowance should be made for individual variation.

CERURA CINEREA Walker. (Eastern form.)

Egg. Slightly more than hemispherical, the base flat. Color, dead black; diameter 1.2 mm.

Laid singly; the larva hatches by eating a hole in the side but does not devour the rest of the shell.

Larva: Second stage. Head rounded, the sutures deep, blackish brown; width 1 mm. Cervical horns brown, spinose as are the caudal filaments, the latter twice annulated with pale yellow. Body green, a blackish brown subdorsal line on each side, the space between them over the dorsum filled in with the same color except in three patches (1) on joint 3 posteriorly, joints 4 and 5 quadrate, (2) on joints 8-10 pointed anteriorly, and (3) a rounded one on joint 12. These are of a more yellowish green than the body color. Extensible threads black, once annulated with white. Length of larva 7 mm; of tails 5 mm.

Third stage. Head subquadrate, rounded,

¹ Can. ent., v. 22, p. 253.

flat in front, dead brownish black, the lower part paler and mottled centrally in front with a paler color. Antennae white; labrum and ocelli brown; width of head 1.3 mm. Cervical horns thick, heavily spinose, brownish black; several rows of minute piliferous tubercles on the body; tails spinose, dark red-brown, twice broadly annulated with yellowish and tipped with the same color. Body green, a purple-brown subdorsal line on each side which passes to the spiracles on joints 7 and 8, a little interrupted, especially on joint 5. The space between them is filled in with purple-brown on joints 2 and 3, on joints 6-9 and on joints 11 and 13, though not completely on joints 8 and 9, but with a trace of a dorsal line on the other joints. Venter whitish.

Fourth stage. Head higher than wide, rounded, a little flattened in front; a minute tubercle before the apex of each lobe; purplish black, finely mottled with yellow, green at the sides posteriorly; antennae white, ocelli black; width 2.2 mm. Cervical horns thick, covered by piliferous tubercles with about six rows of similar tubercles on each side of the body, only the upper two distinct. Color yellowish green. A triangular dorsal patch on joints 2 and 3 covering the cervical horns purplish black, mottled with little yellow spots; a larger patch on joints 4-9 elliptical, retracted at the segmental incisures, reaching the spiracle on joint 8, replaced centrally irregularly by yellow and broadly connected with a small patch on joints 10 and 11 which widens on 11 and is narrowly connected with the last patch on joint 13, replaced by greenish on the anal plate. Tails purple-brown, twice annulated with yellow.

Fifth stage. Head purplish black, green at the sides posteriorly, reticulated where the colors meet; mottled with yellowish in front rather broadly but more narrowly to vertex. Clypeus and mouth purplish, jaws black, antennae white; width of head 3.2 mm. Cervical shield large, smooth, with angulations at the corners, representing the "horns" of the

previous stage. Body slightly elevated dorsally at joint 3 posteriorly, but without a process on either joints 3 or 4. Tails spined, purplish black, twice annulated with greenish yellow. Body yellow-green speckled on the sides with yellow and with small brown piliferous spots. The dorsal patches are much as before, the first triangular on joints 2 and 3 covering the top part of the smooth punctured corners of the cervical shield, ending on joint 3 posteriorly, covered with little yellow spots and narrowly bisected by a pale dorsal line. The other patches are confluent; beginning in a point on joint 4 the second patch widens, contracted at each suture to below the spiracle on joint 8 and over the subventral space, just enclosing the spiracles on joints 7 and 9; it narrows on joints 8 and 9 joining the third patch on joints 10 or 11 (in different examples). The third widens a little on joint 11 and narrows on joints 11 and 12 where it joins narrowly the last patch, which widens on joints 12 and 13 and contracts a little at the anal plate. The patch on joints 6-8 is much mottled by large yellow (or partly crimson) spots and on the anal plate by whitish. Spiracles purple-black with a central white line and black marks around them; the lateral yellow specks here segregate to form an obscure stigmatal line. A row of purple-black subventral blotches irregularly represent the feet on the apodal segments. Venter a little whitish with a narrow ventral line posteriorly; feet green. Two erect black spines at the anus. As the stage advances, yellow spots appear in the dorsal patch on the 3rd-5th abdominal segments, the sides are strongly sprinkled with little brown spots and the dorsal band becomes purplish edged with yellow but with no distinct crimson.

Cocoon. Constructed on bark of gummy silk and bits of bark and wood, like that of the other species of *Cerura*.

Food plants:—Poplar (*Populus*) and willow (*Salix*).

Larvae from Dutchess Co., New York.

CERURA CINEREOIDES Dyar. (Western form.)

Egg. Slightly less than hemispherical, the base flat. Color, dull brownish black, smooth. Diameter about 1 mm. Duration of this stage, eight days.

Larva: First stage. Head dark red-brown. On joint 2 are two brown processes, minutely spined. Joint 13 has two "tails" 3 mm. long, brown, twice broadly annulated with pale yellow and minutely spined. The body is brown with three dorsal pale yellow patches, on joints 2 to 6, 8 to 10 and 12 respectively, the posterior one faint. Venter and legs pale whitish. Length of larva, exclusive of the tails, 4 mm. It spins a slight web on the surface of the leaf to which it clings.

Second stage. Head red-brown with two blackish shades in front. Processes on joint 2, which is somewhat swollen, thick and spined. Tails twice broadly annulated with pale yellow. The body is red-brown with a transverse row of minute spined points on each segment. The dorsal patches are as in the previous stage, but the one on joint 12 extends also on joint 11. The venter and legs are pale yellow. The extensile threads in the "tails" are pale whitish at base, the rest dark brown, once broadly annulated with white. They are extended in the same manner as the "horns" of a larva of *Papilio*, the base appearing first, followed by the remainder of the part, reversing itself as it is extruded. These the insect lashes over its back if disturbed. Length 6 mm., tails, 4 mm.

Third stage. Head brown, densely marked with small yellow spots, but leaving two wavy lines of the ground color in front, paler at the sides posteriorly. Antennae whitish. Joint 2 is somewhat swollen and bears two thick processes about 1 mm. long covered with pointed tubercles. Each segment has a row of similar tubercles each bearing a short fine hair. The dorsal ones on joints 3, 6, 7, 8, 9 and 11 are rather larger

than the others. The tails are spinose, green but brown above at the base and twice annulated with brown towards the ends. Length 4.5 mm. The body is yellowish green, the red-brown of the dorsum being reduced to a subdorsal brown line on each side which join on the last segment and are connected over the back on joints 2 and 3 by brown mottlings between the processes, by a large patch on joints 6, 7 and 8 and another on joint 11. The large spot is paler centrally. Later the subdorsal line disappears and the brown dorsal patches are connected by an obscure dorsal line. Length of body, 8 to 12 mm.

Fourth stage. The head is partly retracted under the skin of joint 2, purple-brown before, yellowish green at the sides behind the eyes, the upper two thirds densely covered with small pale yellow spots, but leaving two lines of the ground color in front. A few minute hairs over the surface. Antennae white. The body is slightly elevated dorsally at joint 3. Color green, with a yellowish tinge at the bordering of the dorsal patches, which are four in number and purple-brown. The first is on joints 2 and 3, triangular, covering the upper part of the spined processes of joint 2, partly divided by a green dorsal line anteriorly; the second is on joints 4 slightly and 5 to 9, elliptical, reaching below the spiracles, pointed anteriorly, and connected posteriorly with the third patch on joints 10 and 11, which widens posteriorly and narrows abruptly to the fourth patch on joints 12 and 13 which is partly replaced by the ground color. The two last extend over the subdorsal spaces. All are partly mottled with pale yellow and contain conical tubercles, each surmounted by a short hair. The sides of the body are sprinkled with brown and whitish specks and have a few short fine white hairs. Venter white. Tails purple brown at the basal half above and twice annulated with brown at the extremities. They are still spinose and the extensile threads are black with a white ring.

Fifth stage. Head as before, but at ma-

turity the yellow spots are quite faint and a blackish shade extends up from the eyes widening to the vertex. Jaws black; antennae white. Body smooth, the conical piliferous elevations represented by brown spots. The processes on joint 2 are relatively much smaller and without spines. A slight dorsal elevation on joint 3 posteriorly, just covered by the end of the first dorsal patch. Tails spined as before and marked the same. The extensile threads are dark purplish black, once annulated with purplish white. Dorsal patches much as before, the second, third and fourth strongly confluent, the second and third most so. The second is marked centrally with many dark crimson spots, with which color all the patches are narrowly edged inside the yellow border. At maturity the color of all the patches fades to lilac and a number of yellow spots appear in the second one, its outline anteriorly becoming irregular. Body yellowish green with a transverse row of purple-brown spots on each segment, more numerous subventrally, and a number of whitish spots, which are thickest at the spiracles giving the appearance of a stigmatal line. These are also found on the dorsal patches, and on the anal plate are partly confluent, replacing the purplish brown. The spots on the patch on joint 2 are yellowish like those on the head. Spiracles dark reddish brown, partly surrounded by a similarly colored but paler spot. Venter whitish, at maturity green, a reddish ventral line on joints 12 and 13. Purple spots on the bases of the legs and on the legless

segments. Feet green, marked with brownish.

At the anus, beyond the upper anal plate, are two erect spiny hairs which serve to project the frass to a considerable distance. Length of larva 35 mm.; of tails 5 mm.

Cocoon. Formed on a piece of wood first of gummy silk which is strengthened by many little pieces of wood bitten off from inside. When finished, it is elliptical, quite hard and of the color of the wood or bark on which it is made. Length about 30 mm.; width, 13 mm.

Pupa. Cylindrical, tapering slightly at both extremities, somewhat flattened. Color pale brown, venter yellowish and a dark dorsal line. Wing and leg cases greenish. Abdomen very minutely punctured. Wing cases creased. Length 18 mm.; width 6 mm.

The duration of the first larval stages was from three to six days, the last two seven days. The pupa state lasts through the winter.

Food plant. Probably Willow (*Salix*).

Larvae from Los Angeles Co., California.

TWO NEW TACHINIDS.

BY C. H. TYLER TOWNSEND, LAS CRUCES, N. M.

The following two species of Tachinidae, recently received from Professor F. L. Harvey, of Orono, Maine, among a lot of other Diptera for determination, prove to be new. As he desires to use

the names in a future paper of his, I submit descriptions of them.

Tachina clisiocampae n. sp. ♂. Eyes brown, very thinly and indistinctly hairy;